UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
NOVEMBER EXAMINATION 2014

PROGRAMME: B Ed (PGCE AND FET)
MODULE: SUBJECT METHODOLOGY: LIFE SCIENCES
CODE: XLS0000 AND XLS0001
TIME: 3 hours
MARKS: 100
EXAMINER: Prof J de Beer
MODERATOR: Dr M Abrie (University of Pretoria)
(This paper consists of 4 pages)

INSTRUCTIONS

Read the following instructions carefully before answering the questions.

1. This question paper consists of 6 questions, and all questions should be answered in the answer book provided.
2. Questions can be answered in any sequence- just ensure that you clearly number your answers.

QUESTION 1

Study the following excerpt from the work schedule for Life Sciences- the topic to be taught is human nutrition. Questions 1 – 3 in this examination paper refer to this except.

Scientific Inquiry & Problem-solving Skills	**Constructs and Applies Life Sciences Knowledge**	**Life Sciences, Technology, Environment & Society**
- Use charts and torso/dissections to investigate structure of the digestive system. - Investigate whether learners are getting a balanced diet. - Analyse the ingredient list on the labels of various food items to explore the importance of the ingredients to a healthy life.	**Human nutrition** State the importance of food for the supply of energy needs; provision of material for growth and to maintain body processes. Describe the structure and functions of parts of the digestive system: major components being mouth, pharynx, oesophagus, stomach, small intestine, large intestine, rectum and anus. Associated organs: salivary	Discuss the impact of the chosen disease/s on the individual and society. Discuss one or more of the following: Socio-economic factors/poverty and nutrition - related to school nutrition programme/feeding poor learners. How your school can promote good eating habits e.g. school tuck-shop not selling junk food.

	glands, liver, gall bladder and pancreas. Explain how food is physically and chemically digested (mention that there are enzymes that act upon proteins, carbohydrates and lipids, and mention the end products, without names of specific enzymes). Explain how digested food is absorbed. Explain how undigested food and indigestible substances are eliminated from the body. Describe the adaptations of the tissues that play a role in nutrition. Describe the homeostatic balance of glucose in the body. State the importance of maintaining a balanced diet. Describe causes, prevention, symptoms and treatment of one or more of the following nutrition related diseases/disorders/ allergies e.g. obesity, anorexia, nutritional marasmus, kwashiorkor, bulimia, allergy to various foods. Discuss the use of indigenous plants in treating nutritional disorders.	Should richer countries help to feed the starving, poorer nations? Role of organizations e.g. Heart Foundation in promoting good nutrition. People with special diets e.g., diabetes, vegetarian, athletes, pregnancy, cultural diets.

QUESTION 1

In this module we have briefly looked at different learning theories, such as cognitive learning theories, social learning theories and constructivism. Write an essay, in which you explain how you will be guided by this knowledge, when planning learning opportunities when teaching about human nutrition. **(12)**

QUESTION 2

Answer the following questions related to lesson planning.

2.1. In your teaching you have to address the cognitive, affective and psychomotor domains. What is meant by:

2.1.1. The cognitive domain (2)

2.1.2. The affective domain (2)

2.1.3. The psychomotor domain (2)

2.2. Give a brief account of the three Specific Aims for the Life Sciences. (3)

2.3. Plan a lesson on human nutrition, by referring to the different phases in lesson presentation discussed in this course. You also need to give details on the media that you will use, and on assessment. Use the following sub-headings in your answer.

2.3.1. Contextual issues (refer to the six questions that should guide lesson planning. When describing the context, use the UJMA learners, if you were part of the UJMA project, or alternatively the school in which you completed your school experience). (12)

2.3.2. Lesson Objectives (use action verbs) (3)

2.3.3. Invitation phase (introduction) (3)

2.3.4. Teaching methods (2)

2.3.5. Learner engagement (2)

2.3.6. Media (2)

2.3.7. Summary and integration (3)

(36)

QUESTION 3

Compile a test that you would give your learners, to assess them on human nutrition. Make use of the following types of questions:

- Multiple choice items
- Give the correct biological term for the descriptions
- Graph with questions
- Paragraph-type questions
- A question addressing affective outcomes, and a Science-Technology-Society focus

You do not need to provide a memorandum. **(20)**

QUESTION 4

Plan a lesson **on any theme** in the Life Sciences curriculum, using a creative ('novel') approach such as De Bono's Thinking Hats, the Jigsaw method, or the 'hot potato' method. Describe the advantages of this teaching method. **(10)**

QUESTION 5

Explain what is meant by any **ONE** of the following barriers to learning (give examples where applicable), and explain what you will do to assist learners to overcome this barrier.

5.1. Systemic barriers
5.2. Language barriers
5.3. Socio-economic barriers
(Any one barrier X 4 marks) **(4)**

QUESTION 6

Assume that you accept employment at a school in a rural village, and upon your arrival at the school, you realize that there is not a laboratory for teaching Life Sciences. A further shock awaits you: there is also no science equipment, apparatus or an overhead projector. Develop a strategy to ensure that effective Life Sciences teaching can take place at this school, and that you will be able to follow inquiry-based approaches. Use the following headings in your answer:

6.1. My long-term strategy (4)

6.2. Using local resources in my teaching (4)

6.3. Science-on-a-shoestring approaches (give practical examples) (10)

(18)

TOTAL: 100

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